A PRIMER ON GASOLINE PRICES

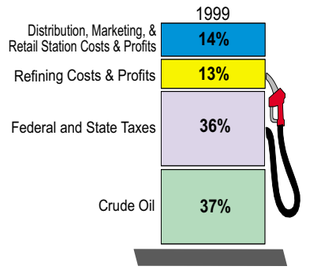
Gasoline, one of the main products refined from crude oil, accounts for just about 20 percent of the energy consumed in the United States. The primary use for gasoline is in automobiles and light trucks. Gasoline also fuels boats, recreational vehicles, and various farm and other equipment. While gasoline is produced year-round, extra volumes are made in time for the summer driving season. Gasoline is delivered from oil refineries mainly through pipelines to a massive distribution chain serving 180,000 retail gasoline stations throughout the United States. There are three main grades of gasoline: regular, midgrade, and premium. Each grade has a different octane level. Price levels vary by grade, but the price differential between grades is generally constant.

What are the components of the retail price of gasoline?

The cost to produce and deliver gasoline to consumers includes the cost of crude oil to refiners, refinery processing costs, marketing and distribution costs, and, finally, the retail station costs and taxes. The prices paid by consumers at the pump reflect these costs, as well as the profits (and sometimes losses) of refiners, marketers, distributors, and retail station owners.

In 1999, when the price of crude oil averaged $17.46 per barrel, crude oil accounted for about 37% of the cost of a gallon of regular grade gasoline (Figure 1). The share of the retail price of regular grade gasoline that crude oil costs represent varies somewhat over time and among regions. For example, on the West Coast, crude oil represented about 31% of the price of gasoline in 1999, while on the Gulf Coast, it represented 39%.

Figure 1. What Do We Pay for in a Gallon of Regular Grade Gasoline?



Source: Energy Information Administration Office of Oil and Gas

Federal, State, and local taxes are a large component of the retail price of gasoline. Taxes (not including county and local taxes) account for approximately 36 percent of the cost of a gallon of gasoline. Within this national average, Federal excise taxes are 18.4 cents per gallon and State excise taxes average 19.96 cents per gallon. Also, seven States levy additional State sales taxes, some of which are applied to the Federal and State excise taxes.[1] Additional local county and city taxes can have a significant impact on the price of gasoline.

Distribution, marketing and retail station costs and profits combined make up 14% of the cost of a gallon of gasoline. Only 28% of service station outlets today are company stations, i.e., are owned or leased by a major oil company and operated by its employees. Nearly 72% are operated by independent dealers free to set their own prices. The price on the pump reflects both the retailer's purchase cost for the product and the other costs of operating the service station. It also reflects local market conditions and factors, such as the desirability of the location and the marketing strategy of the owner.

[1]U. S. Department of Transportation, Federal Highway Administration, *Monthly Motor Fuel Reported by States*, February 2000, Table MF-121T.

WHY ARE CALIFORNIA GASOLINE PRICES HIGHER AND MORE VARIABLE THAN OTHERS?

The State of California operates its own reformulated gasoline program with more stringent requirements than Federally-mandated clean gasolines. In addition to the higher cost of cleaner fuel, there is a combined State and local sales and use tax of 7.25 percent on top of an 18.4 cent-per-gallon Federal excise tax and an 18.0 cent-per-gallon State excise tax.

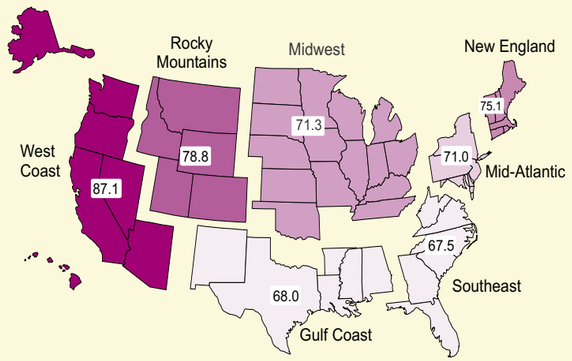
California prices are more variable than others because there are relatively few supply sources of its unique blend of gasoline outside the State. California refineries need to be running near their fullest capabilities in order to meet the State's fuel demands. If more than one of its refineries experiences operating difficulties at the same time, California's gasoline supply becomes very tight and the prices soar. Supplies could be obtained from the Gulf Coast and foreign refineries; however, California's substantial distance from those refineries is such that any unusual increase in demand or reduction in supply results in a large price response in the market before relief supplies can be delivered. The farther away the necessary relief supplies are, the higher and longer the price spike will be.

Why Do Gasoline Prices Fluctuate?

Even when crude oil prices are stable, gasoline prices normally fluctuate due to factors such as seasonality and local retail station competition. Additionally, gasoline prices can change rapidly due to crude oil supply disruptions stemming from world events or domestic problems, such as refinery or pipeline outages.

Seasonality in the demand for gasoline - When crude oil prices are stable, retail gasoline prices tend to gradually rise before and during the summer, when people drive more, and fall in the winter. Good weather and vacations cause U.S. summer gasoline demand to average about 5% higher than during the rest of the year. Prices during the summer typically show a 3.5 cent-per-gallon increase, even after correcting for changes in crude oil prices.

Figure 2. Motor Gasoline Prices at Retail Outlets, 1999 Average Regular Grade, by Region (cents per gallon, **excluding taxes**)



Source: Preliminary data from the Energy Information Administration's *Petroleum Marketing Monthly*, Table 31.

Changes in the cost of crude oil - Events in crude oil markets were a major factor in all but one of the five run-ups in gasoline prices between 1992 and 1997, according to the National Petroleum Council's study *U.S. Petroleum Supply - Inventory Dynamics*.

Crude oil prices are determined by worldwide supply and demand, with significant influence by the Organization of Petroleum Exporting Countries (OPEC). Since it was organized in 1960, OPEC has tried to keep world oil prices at its target level by setting an upper production limit on its members. OPEC has the potential to influence oil prices worldwide because its members possess such a great portion of the world's oil supply, accounting for nearly 40% of the world's production of crude oil and holding about 67% of the world's estimated crude oil reserves.

Rapid gasoline price increases have occurred in response to crude oil shortages caused by, for example, the Arab oil embargo in 1973, the Iranian revolution in 1978, the Iran/Iraq war in 1980, and the Persian Gulf conflict in 1990. The most recent gasoline price increases are due in part to OPEC crude oil

production cuts in 1999. In addition, higher demand from a recovering Asian economy caused more competitive bidding for crude oil supplies in the international market and was a contributing factor to an increase in gasoline prices in 1999.

Product supply/demand imbalances - A continuing economic boom in the United States has led to greater demand for gasoline. If demand rises quickly or supply declines unexpectedly due to refinery production problems or lagging imports, gasoline inventories (stocks) may decline rapidly. When stocks are low and falling, some wholesalers become concerned that supplies may not be adequate over the short term and bid higher for available product. Such was the case in late summer 1997, as a demand surge drained gasoline stocks and prices rose rapidly.

Gasoline may be less expensive in one summer when supplies are plentiful vs. another summer when they are not. These are normal price fluctuations, experienced in all commodity markets. For example, the price of corn is higher than normal just before harvest time because corn inventories are depleted at that time. Prices may remain high after the harvest if a drought occurred during the growing season, thereby limiting the supply of corn. Or prices may decline when a healthy crop is produced.

However, prices of basic energy (gasoline, electricity, natural gas, heating oil) are generally more volatile than prices of other commodities. One reason is that consumers are limited in their ability to substitute between fuels when the price for gasoline, for example, fluctuates. So, while consumers can substitute readily between food products when relative prices shift, most do not have that option in fueling their cars.

Why do gasoline prices differ according to region?

Although price levels vary over time, Energy Information Administration (EIA) data indicate that average retail gasoline prices tend to be typically higher in certain States or regions than in others (Figure 2). Aside from taxes, there are other factors that contribute to regional and even local differences in gasoline prices:

Proximity of supply - Areas farthest from the Gulf Coast (the source of nearly half of the gasoline produced in the U.S. and, thus, a major supplier to the rest of the country) tend to have higher prices. The proximity of refineries to crude oil supplies can even be a factor, as well as shipping costs (pipeline or waterborne) from refinery to market.

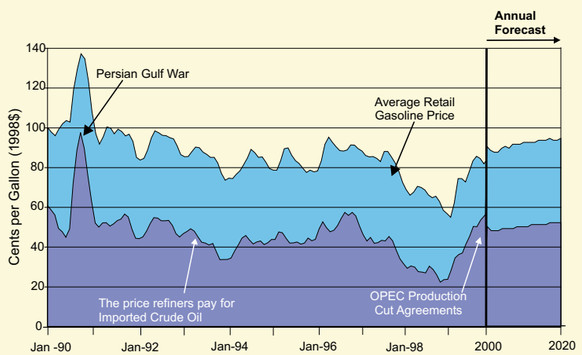
Supply disruptions - Any event which slows or stops production of gasoline for a short time, such as planned or unplanned refinery maintenance, can prompt bidding for available supplies. If the transportation system cannot support the flow of surplus supplies from one region to another, prices will remain comparatively high.

Competition in the local market - Competitive differences can be substantial between a locality with only one or a few gasoline suppliers versus one with a large number of competitors in close proximity. Consumers in remote locations may face a trade-off between higher local prices and the inconvenience of driving some distance to a lower-priced alternative.

Environmental programs - Some areas of the country are required to use special gasolines. Environmental programs, aimed at reducing carbon monoxide, smog, and air toxics, include the Federal and/or State-required oxygenated, reformulated, and low-volatility (evaporating more slowly) gasolines. Other environmental programs put restrictions on transportation and storage. The reformulated gasolines required in some urban areas and in California add three and five cents, respectively, to the price of conventional gasoline served elsewhere.

Operating costs - Even stations co-located have different traffic patterns, rents, and sources of supply that influence retail price.

Figure 3. The Price Refiners Pay for Imported Crude Oil and Average Retail Gasoline Price (Average of All Grades)



Source: Energy Information Administration *Petroleum Marketing Monthly* DOE/EIA-0380, various issues and the *Annual Energy Outlook* DOE/EIA-0383(2000), December 1999.

LONG-TERM (YEARS 2000 TO 2020) OUTLOOK FOR GASOLINE PRICES

In the future, gasoline prices are expected to be pushed generally higher by an increase in the population and an economic expansion, particularly in the third world (Figure 3). In addition, tighter environmental standards on the quality of gasoline will also be a factor in higher prices as will the lack of available U.S. refining capacity. The lack of available refining capacity is already contributing to higher retail prices in California (see box on California) and is expected to spread to other States. Offset by lower tax rates, though, U.S. retail gasoline prices are expected to remain among the lowest in the world.

Additional copies of this pamphlet may be obtained from EIA by contacting NEIC at 202-586-8800, or E-Mail:infoctr@eia.doe.gov. The full text is available on EIA's Web site www.eia.doe.gov under "Petroleum," then select "Analysis" on the left sidebar.

The Energy Information Administration publishes many analytical reports on the subject of motor gasoline price changes. For more technical analyses, see: Price Changes in the Gasoline Market, Motor Gasoline Assessment Spring 1997, and Assessment of Summer 1997 Motor Gasoline Price Increase. These analyses, and others, are available at **www.eia.doe.gov** under "Petroleum," then select "Analysis " on the left sidebar.

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